

REMARKS

Claims 27-36 are rejected, under 35 U.S.C. § 103(a), as being unpatentable over Stacey, Jr. (U.S. Patent 4,520,601, "Stacy") in view of Ernst et al. (U.S. Patent 5,263,804, "Ernst"). The Applicant acknowledges and respectfully traverses and requests reconsideration of the raised obviousness rejection in view of the above amendments and the following remarks.

The teaching by Stacey is concerned with the blind side fastening of an object (specifically a ablation tile 12) to a supporting member (specifically a strain isolation pad 14) where the fastening device 10 used comprises three components, namely, a flanged bearing sleeve 16 of aluminum, a fastening member 20 in the form of an internally-threaded flanged cylinder, and a connecting piece 18 in the form of an externally-threaded brass plug (column 3, lines 12-17). The three components are assembled together by inserting the cylinder of the fastening member 20 in the flanged end of the bearing sleeve 16 and inserting the connecting piece 18 in the opposite end with its external threads engaged with the internal threads of the fastening member 20 (column 3, lines 17-23). The assembled components are inserted in holes 24, 25 drilled in the underside of the ablation tile 12 to accommodate the bearing sleeve 16 with the plug 18 and the fastening member 20 attached countersunk in the tile 12, and the bearing sleeve 16 adhered to the tile 12 (column 3, line 55-61). The hole 24 receives the cylindrical portion 26 of the bearing sleeve 16 and is longer than the portion 26 so as to accommodate the attached connecting piece 18 with space 23 for its adjustment, whereas the hole 25 receives the flange 36 of the bearing sleeve 16 and is deep enough accommodate the attached fastening member 20 including its projecting blades 41-44 (column 3 line 62- column 4 line 7).

The Examiner alleges, with respect to the text of claim 27, how the method-steps of the claim are found in the Stacey teaching. In this regard:

(a) Claim 27 is concerned with the anchoring of a fitting to a base member of a mineral composition and includes a step of providing "a cylindrical plug-element" which the Examiner relates to Stacey's provision of the bearing sleeve 16. However, the claim as amended defines the "cylindrical plug-element" as being of "said mineral composition", that is

to say, of the same mineral composition as the base member to which the fitting is anchored, and being entered for close-fit retention in a cavity of the base member "by adhesive film".

The fact that the plug-element is of the same material as the base member is very significant in the circumstances referred to in paragraph [0002] of the description where anchoring of a fitting is required to a base member of mineral material. As explained in greater detail in paragraph [0016], the anchoring of a fastening to a base member of mineral material is generally carried out by drilling a hole in the material and inserting a fitting in the form of a threaded boss of brass or nylon into the hole for tight-fit retention. However, it has been found that this form of anchoring of a fitting is not satisfactory since cracking of the mineral material tends to occur so as to allow the boss to pull away and thereby defeat the object of providing a secure anchor.

Attempts at improving the anchoring of the fitting by use of adhesive were tried but no satisfactory adhesive for bonding the metal or plastics boss to the mineral material has been found. The present invention overcomes the above noted problem by recognizing that a satisfactory adhesive bond can be achieved between the mineral material and itself, and utilizes this latter fact to achieve a secure anchor. More particularly, the secure anchoring of the fitting is achieved by trapping the fitting in a cavity within the base member under a plug-element of the same material adhesively bonded to the base member.

In the light of the above, it is submitted that the fact that the plug-element is of the same mineral material as the base member, as specifically recited in the claims, is of major significance.

According to the Stacey teaching, the bearing sleeve 16 is of aluminum and has a flanged form that is not readily fabricated in a mineral composition. More particularly, the *Stacey bearing sleeve 16 of aluminum is not of the same material as the Stacey ablation tile of ceramic material*. Thus, contrary to the Examiner's assertion, the Stacey bearing sleeve 16 does not equate to the plug-element of mineral material as specified in the claims.

(b) Claim 27, as amended, includes the step of "inserting the fitting into the underside of the plug-element with the threaded portion of the fitting extending lengthwise of the bore of the plug-element and the base of the fitting engaged in a recess in the underside

of the plug-element for precluding movement of the fitting relative to the plug-element". It is respectfully submitted that no such step is involved in assembly of the Stacey structure.

The Examiner acknowledges that assembly of the Stacey structure does not involve the engagement of the base of the Stacey fitting 20 in a recess in the underside of the Stacey bearing sleeve 16 for precluding movement of the fitting relative to the plug-element. But with the amendment made to claim 27, there is the further distinction that the plug-element is entered "into the cavity for close-fit retention therein by adhesive film with the top of the plug-element substantially flush with said surface of the base member and the underside of the plug-element abutting the bottom surface of the cavity to trap the fitting within the cavity under the plug-element".

If, as the Examiner asserts (and the Applicant denies), the Stacey bearing sleeve 16 can be equated to the Applicant's "plug-element", the "underside" of the "plug-element" as specified in the amended claims relates to the underside of the flange 36 (see Stacey's Figure 4) since it is into the aperture 46 of the flange 36 that the Stacey fastening member 20 (equated by the Examiner to the "fitting" of the claim) is inserted. However, it is clear that, contrary to the requirement of the amended claims, this underside of the flange 36 does not abut the bottom surface of the Stacey holes 24 and 25 (namely, the cavity into which the bearing sleeve 16 is received). Nor is the "top" of the sleeve 16 flush with the bottom surface of the ablation tile 12 (namely, the surface from which the holes 24 and 25 open).

Thus, in addition to the omission from the Stacey disclosure of the "recess", already identified by the Examiner, there is also an omission from that disclosure of a "plug-element" (a) which is of the same mineral material as the base member and (b) which has its underside abutting the bottom surface of the cavity in the base member. Accordingly, there is absence from the Stacey disclosure of the "plug-element" and the method steps relating to it which are required by amended claim 27.

Next, claim 27 is rejected, under 35 USC § 103, is based on the disclosure of Stacey in view of the teaching of Ernst et al., and in the context of the acknowledged absence from Stacey of the required recess in the underside of the plug-element. The Applicant

acknowledges and respectfully traverses the raised obviousness rejection in view of the above amendments and the following remarks. It is submitted that:

(i) It is respectfully submitted that the teaching of Ernst et al. has no obvious relevance to Stacey's object of anchoring heat shield tiles to the strain isolation pad of a space vehicle while the vehicle is in outer space (see Stacey's column 2 lines 3-6). As Stacey states, adhesives are generally ineffective in outer space because the absence of atmosphere prevents the adhesive from setting (column 1 lines 36-39), but the use of adhesive is an essential part of the Ernst et al. teaching. Accordingly, it would not be obvious (indeed it would require invention) to adopt the teaching of Ernst et al. in furtherance of the Stacey object.

(ii) The teaching of Ernst et al., concerning an open-ended cup, has no obvious relevance to the provision of a recess as required by amended claim 27, namely, a recess which is provided in the underside of a plug-element of mineral material and which is for receiving the base of a fitting for precluding movement of the fitting relative to the plug-element.

(iii) The teaching of Ernst et al. has no obvious relevance to solving the problem facing the present Applicant in that it requires the use of an adhesive effective between metal and masonry, and as indicated in paragraphs [0002] of the present application, such adhesives are not effective for anchoring a fitting in mineral material.

(iv) The teaching of Ernst et al. has no relevance to the provision of the "plug-element" and the method steps relating to it, as required by the amended claim 27.

On the basis of the above, it is respectfully submitted that the amended claim 27 is patentable over Stacey, alone or in combination with Ernst et al.

With respect to claims 28-31, the Applicant notes that claims 28-31 each depend, directly or indirectly, from amended claim 27 and, it is submitted, that each of these dependent claims, like the amended claim 27, is patentable over Stacey alone or Stacey in view of Ernst et al.

In relation to claim 29, the Examiner indicates it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Stacey by allowing the "fitting anchor" to open at the surface of the base member in order to provide direct access to the

fastener as taught by Ernst et al. It is submitted that such a modification of Stacey's structure would be directly contrary to Stacey's object of fastening a shield tile to the isolation pad of a space vehicle. Firstly, in this regard, the proposed modification would extend the "fitting anchor" to a vulnerable location on the surface of the space vehicle, unprotected by the heat shield. Secondly, the Examiner identifies the "threaded portion" of the fitting specified in claim 27 with the threaded inner surface 31 of the cylindrical portion 30 of Stacey's fastening member 20. Extension of the Stacey's cylindrical portion 30, in the manner required by claim 29 to open at the surface of Stacey's base member 12, would locate Stacey's connecting piece 18 projecting above the member 12 in a manner that would be totally unacceptable in the Stacey context of the heat shield of a space vehicle. In these circumstances therefore, it would require invention to apply the teaching of Ernst et al. as proposed by the Examiner, to what is taught by Stacey. Thus, claim 29 of the present application is further distinguished patentably over Stacey in view of Ernst et al.

The Examiner rejects claim 32 on grounds which correspond to the rejection of claim 27 in view of Ernst et al. The amendments now made to claim 32 correspond to those made to claim 27, and the substance of the arguments advanced above in support of claims 27-31 are applicable to claim 32 as amended, and also to each of its dependent claims 33-36. More particularly, it is submitted that in addition to the omission from the Stacey disclosure of the "recess", already identified by the Examiner, there is omission from that disclosure of a "plug-element" (a) which is of the same mineral material as the base member and (b) which has its underside abutting the bottom surface of the cavity in the base member. Accordingly, there is absence from the Stacey disclosure of the "plug-element" required by amended claim 32.

Moreover:

(i) The teaching of Ernst et al. (which involves the use of adhesive) has no obvious relevance to Stacey's object of securing heat shield tiles to the strain isolation pad of a space vehicle while the vehicle is in outer space (Stacey's column 2 lines 3-6). Accordingly, it would not be obvious (indeed it would require invention) to adopt the teaching of Ernst et al. in furtherance of the Stacey object.

(ii) The teaching of Ernst et al concerning an open-ended cup has no obvious relevance to the provision of a recess as required by amended claim 32, namely, a recess which is provided in the underside of a plug-element of mineral material and which is for receiving the base of a fitting for precluding movement of the fitting relative to the plug-element.

(iii) The teaching of Ernst et al. has no obvious relevance to solving the problem facing the present Applicant in that it requires the use of an adhesive effective between metal and masonry, and as indicated in paragraphs [0002] of the present application, such adhesives are not effective for anchoring a fitting in mineral material.

(iv) The teaching of Ernst et al has no relevance to the provision of the "plug-element" required by the amended claim 32.

On the basis of the above, it is respectfully submitted that the amended claim 32, and each of claims 33-36 dependent thereon, are patentable over Stacey alone or Stacey in view of Ernst et al.

Consideration of the other art made of record has not revealed any disclosure more pertinent to the claimed subject matter of the present application, and accordingly it is submitted that each of claims 27-36, currently pending in the above identified application, is now patentable.

If any further amendment to this application is believed necessary to advance prosecution and place this case in allowable form, the Examiner is courteously solicited to contact the undersigned representative of the Applicant to discuss the same.

In view of the above amendments and remarks, it is respectfully submitted that all of the raised rejection(s) should be withdrawn at this time. If the Examiner disagrees with the Applicant's view concerning the withdrawal of the outstanding rejection(s) or applicability of the or Stacey in view of Ernst et al. references, the Applicant respectfully requests the Examiner to indicate the specific passage or passages, or the drawing or drawings, which contain the necessary teaching, suggestion and/or disclosure required by case law. As such teaching, suggestion and/or disclosure is not present in the applied references, the raised rejection should be withdrawn at this time. Alternatively, if the Examiner is relying on his/her expertise in this field, the Applicant respectfully requests the Examiner to enter an affidavit substantiating

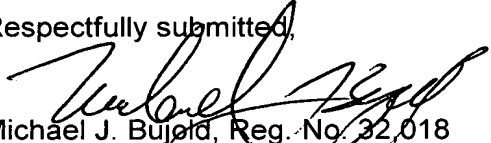
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the Examiner's position so that suitable contradictory evidence can be entered in this case by the Applicant.

In view of the foregoing, it is respectfully submitted that this application is now placed in a condition for allowance. Action to that end, in the form of an early Notice of Allowance, is courteously solicited by the Applicant at this time.

In the event that there are any fee deficiencies or additional fees are payable, please charge the same or credit any overpayment to our Deposit Account (Account No. 04-0213).

Respectfully submitted,



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